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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/566,867	07/28/2006	**Graham Collins**	H27650/4582/110703	9933

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EXAMINER	
DINH, BACH T	

ART UNIT	PAPER NUMBER
1795	

NOTIFICATION DATE	DELIVERY MODE
05/20/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/566,867	COLLINS, GRAHAM	
	Examiner	Art Unit	
	BACH T. DINH	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 March 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Summary

1. This is the response to the communication filed on 03/10/2010.

2. Claims 1-19 remain pending in the application.

3. The application is not in condition for allowance.

Election/Restrictions

4. Applicant's election of claims 1-19 in the reply filed on 03/10/2010 is acknowledged. During the telephone call made on 11/25/2009 regarding the restriction of current application, attorney Albin Gess indicated that the election of claims 1-19 for examination is made with traverse; however, the communication filed on 03/10/2010 does not include any arguments regarding the restriction made on 11/25/2009. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 1-8, 10-15, 17 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable Lofgren (US 3,708,412) in view of Tabata et al. (US 5,667,406) and Chand (US 4,948,496) with further evidence provided by Illman et al. (US 4,522,899). Chand and Illman are cited and relied on for the first time in this office action. Their use is necessitated by Applicant's amendment to the claims.

Addressing claims 1 and 13, Lofgren discloses an electrochemical gas sensor (1:6-15, figure 1) having:

A housing 10 having at least one wall and a plurality of connection apertures through the wall, the apertures having bores (the housing 10 has apertures with bores, through which the electrode leads 17 and 18 extend),

Sensing and counter electrodes (12 and 16, electrode 12 comes into contact with the measuring medium and electrode 16, thereby completing the measuring circuit; therefore, electrode 12 is the sensing electrode and electrode 16 is the counter electrode),

A liquid electrolyte 11 contained in the housing in chemical contact with the electrodes (figure 1), and

A plurality of current collectors 17 and 18 in electrical contact with respective ones of the respective electrodes,

Furthermore, Lofgren shows that the current collectors 17 and 18 are bent in different direction as they extend from the electrodes, through the housing, to the outside; therefore, the current collectors 17 and 18 are flexible and are used for establishing electrical connection between the electrodes and outside circuitry (3:35-38).

Lofgren is silent regarding the current collectors are made of metal and a compliant seal of a thermoplastic elastomeric material is inserted into the one of the connection apertures and the configuration of the flexible current collector and the compliant seal as required by claim 1.

Tabata discloses waterproof seal for connector (figures 6-7); wherein, the flexible connector wire 11 extends through a compliant seal A made of an elastomeric material (4:51-54, the seal is made of elastic synthetic rubber, which is elastomeric material) and the seal A being contact with the collector 11 substantially throughout its length along the current collector (figures 6-7) and the arrangement being such that compressive stress induced in the seal A by reaction from the connection aperture urges the seal into distributed sealing contact with the current collector 11 substantially throughout the length of the seal (5:5-30, the lip 19 in uncompressed stage has a diameter that is larger than the diameter of the cavity 46 and the inner lip 22 has a diameter that is smaller than the outer diameter of the wire; therefore, when the seal A is inserted into the cavity 46, the compressive stress induced in the seal A by reaction from the cavity 46 would urge

the seal into distributed sealing contact with the wire substantially throughout the length of the seal A).

Illman provides evidence to show a sealing material 2 made of synthetic rubber material is in fact a thermoplastic elastomeric material (1:53-2:5).

At the time of the invention, one with ordinary skill in the art would have found it obvious to modify the gas sensor of Lofgren with the waterproof seal of Tabata for each of the flexible current collectors 17 and 18 because the waterproof seal would prevent water from entering the gas sensor (Tabata, 2:28-34) when the gas sensor of Lofgren is used for measuring dissolved gas in liquid sample (Lofgren, 1:6-15).

In the modified gas sensor of Lofgren, the current collectors 17 and 18 would extend within their seals through respective ones of the apertures and the compliant seals A of Tabata are in compression against both the current collectors 17 and 18 and the bores of the apertures in the housing 10 in the similar manner as the complaint seal A is in compression against both the wire 11 and the cavity 46 (Tabata, 5:5-30).

Chand discloses a gas sensor; wherein, the flexible connecting wires 54 and 58 (figure 1) that are connected to the electrodes are made of platinum material (5:46-59).

At the time of the invention, one with ordinary skill in the art would have found it obvious to modify the current collectors of Lofgren with the platinum electrode connecting material as disclosed by Chand because the platinum is flexible as shown in figure 1 of Chand and provides electrical connection between the electrodes and the measuring device 64 (figure 1 of Chand), that is suitable for the operation of Lofgren's electrochemical sensor. Furthermore, one would still have obtained the predictable result

of providing electrical connection between the electrodes and the measuring device when performing the simple step of substituting the known platinum material for the conductive material of the current collectors 17 and 18 of Lofgren (Rationale B, KSR, MPEP 2141).

The limitation "over-molded directly onto the flexible, metal current collector" is drawn to the processes of forming the compliant seal over the current collector, which do not further structurally limit the claimed apparatus (MPEP 2113).

Addressing claims 2-3, figures 6-7 of Tabata, the seal A has many portions with different outer diameters with the outer diameters of the tip portions being the smallest; therefore, the length of the seal A is clearly shown in figures 6-7 as being at least 3 times larger than the outer diameters of the tip portions of the seal.

Addressing claim 4, figure 6 of Tabata shows that the length of the seal A is more than ten times larger than the diameter of the wire 11.

Addressing claim 5, Tabata is silent regarding the length of the seal to the diameter of the wire is at least of the order to 30:1.

At the time of the invention, one with ordinary skill in the art would have found it obvious to modify the seal of the gas sensor of Lofgren and Tabata to have a length that is at least 30 times larger than the diameter of the current collector because doing so is a matter of engineering choice and a longer seal would provide additional protection for the

current collector along its length. Therefore, one would have arrived at the claimed ratio of the length of the seal to the diameter of the current collector is at least of the order of 30:1 when performing routine experiment in order to optimize the protection provided by the seal to the current collector.

Addressing claims 6-8, Tabata discloses the seal A has a central through bore through which the wire 11 extends; therefore, Tabata discloses the structure of the current collector and seal combination. The subject matters of current claims are drawn to the processes of forming the current collector and the seal combination, which do not further structurally limit the claimed apparatus (MPEP 2113).

Addressing claim 10, Tabata discloses in figure 4 that the seal A has one or more ridges 19 extending around its outer circumference.

Addressing claim 11, Tabata discloses the seal A has a cylindrical body and a larger diameter outer end boss 20 (figure 4).

Addressing claim 12, Tabata discloses the end tips of the seal A are tapered (figure 4).

Addressing claim 14, Tabata discloses the outer diameter of the ridges 19 is larger than the inner diameter of the cavity 46 (5:11-13); therefore, Tabata discloses an interference fit.

Addressing claim 15, Tabata discloses the seals have cylindrical bodies and the larger diameter outer end bosses 20 (figure 4) and the cavity 46 or connection apertures have a complementary shape (figure 6).

In the modified gas sensor of Lofgren the apertures made in the housing body 10 would have complementary shape for securely fitting the waterproof seals of Tabata with the current collectors 17 and 18.

Addressing claim 17, Lofgren discloses an electrochemical gas sensor (1:6-15, figure 1) having:

A housing 10 having at least one wall and a plurality of connection apertures through the wall, the apertures having bores (the housing 10 has apertures with bores, through which the electrode leads 17 and 18 extend),

Sensing and counter electrodes (12 and 16, electrode 12 comes into contact with the measuring medium and electrode 16 completes the measuring circuit; therefore, electrode 12 is the sensing electrode and electrode 16 is the counter electrode),

A liquid electrolyte 11 contained in the housing in chemical contact with the electrodes (figure 1), and

A plurality of current collectors 17 and 18 in electrical contact with respective ones of the respective electrodes,

Furthermore, Lofgren shows that the current collectors 17 and 18 are bent in different direction as they extend from the electrodes, through the housing, to the outside;

therefore, the current collectors 17 and 18 are flexible and are used for establishing electrical connection between the electrodes and outside circuitry (3:35-38).

Lofgren is silent regarding a compliant seal adapted to fit in the one of the connection apertures and the configuration of the flexible current collector and the compliant seal as required by claim 1.

Tabata discloses waterproof seal for connector (figures 6-7); wherein, the flexible connector wire 11 extends through a compliant seal A made of an elastomeric material (4:51-54, the seal is made of elastic synthetic rubber, which is elastomeric material) and the seal A being contact with the collector 11 substantially throughout its length along the current collector (figures 6-7) and the arrangement being such that compressive stress induced in the seal A by reaction from the connection aperture urges the seal into distributed sealing contact with the current collector 11 substantially throughout the length of the seal (5:5-30, the lip 19 in uncompressed stage has a diameter that is larger than the diameter of the cavity 46 and the inner lip 22 has a diameter that is smaller than the outer diameter of the wire; therefore, when the seal A is inserted into the cavity 46, the compressive stress induced in the seal A by reaction from the cavity 46 would urge the seal into distributed sealing contact with the wire substantially throughout the length of the seal A).

Illman provides evidence to show a sealing material 2 made of synthetic rubber material is in fact a thermoplastic elastomeric material (1:53-2:5).

At the time of the invention, one with ordinary skill in the art would have found it obvious to modify the gas sensor of Lofgren with the waterproof seal of Tabata for each

of the flexible current collectors 17 and 18 because the waterproof seal would prevent water from entering the gas sensor (Tabata, 2:28-34) when the gas sensor of Lofgren is used for measuring dissolved gas in liquid sample (Lofgren, 1:6-15).

In the modified gas sensor of Lofgren, the current collectors 17 and 18 would extend within their seals through respective ones of the apertures and the compliant seals A of Tabata are in compression against both the current collectors 17 and 18 and the bores of the apertures in the housing 10 in the similar manner as the complaint seal A is in compression against both the wire 11 and the cavity 46 (Tabata, 5:5-30).

With respect to the limitation "the current collects are preliminarily located … the back-fillings are compressed by end caps" is drawn to the process of forming the seal around the current collector, which does not further structurally limit the claimed apparatus (MPEP 2113). In figure 7, Tabata discloses the seal A is formed around the wire 11 and the seal A is compressed by the end cap 41, which reads on the structure of the seal and current collector as claimed.

Chand discloses a gas sensor; wherein, the flexible connecting wires 54 and 58 (figure 1) that are connected to the electrodes are made of platinum material (5:46-59).

At the time of the invention, one with ordinary skill in the art would have found it obvious to modify the current collectors of Lofgren with the platinum electrode connecting material as disclosed by Chand because the platinum is flexible as shown in figure 1 of Chand and provides electrical connection between the electrodes and the measuring device 64 (figure 1 of Chand), that is suitable for the operation of Lofgren's electrochemical sensor. Furthermore, one would still have obtained the predictable result

of providing electrical connection between the electrodes and the measuring device when performing the simple step of substituting the known platinum material for the conductive material of the current collectors 17 and 18 of Lofgren (Rationale B, KSR, MPEP 2141).

The limitation "over-molded directly onto the flexible, metal current collector" is drawn to the processes of forming the compliant seal over the current collector, which do not further structurally limit the claimed apparatus (MPEP 2113).

Addressing claim 19, Tabata discloses the force exerted by the housing body 45 deform the outer ridges 19 of the seal A without showing any deformation caused to the housing body 45 by the seal A; therefore, it is Examiner's position that the housing body 45 is rigid and has the elastic modulus that is at least two orders larger than the elastic modulus of the compliant seal A.

Lofgren is silent regarding the material of the housing body 10; however, it is quite obvious that the housing 10 of the gas sensor has to have high rigidity in order to provide protection for the internal components. Therefore, at the time of the invention, one with ordinary skill in the art would have modify the body of the gas sensor of Lofgren to have the elastic modulus of at least two orders larger than the elastic modulus of the seal A because the housing having such property would provide adequate compression force to deform the outer ridges 19 of the seal A; thereby, providing waterproof sealing.

8. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lofgren (US 3,708,412) in view of Tabata et al. (US 5,667,406) and Chand (US 4,948,496) with evidence provided by Illmann et al. (US 4,522,899) as applied to claims 1-8, 10-15, 17 and 19 above, and further in view of Watanabe et al. (Us 5,224,875).

Addressing claim 9, Tabata is silent regarding the seal having two complementary halves having a central groove for receiving the current collector.

Watanabe discloses a watertight seal (figure 5) comprises two complementary halves having a central groove for receiving the wire C.

At the time of the invention, one with ordinary skill in the art would have found it obvious to modify the seal of Lofgren and Tabata to have two complementary halves as disclosed by Watanabe because the seal of Watanabe would provide secure watertight connection for the connection wire (Watanabe, 3:2-13). Furthermore, one would have obtained the predictable result of forming waterproof terminal connection for the current collector of Lofgren and Tabata when performing the simple substitution of the watertight seal having two complementary halves of Watanabe for the waterproof seal A of Tabata (MPEP 2141, KSR, Rationale B).

9. Claims 16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lofgren (US 3,708,412) in view of Tabata et al. (US 5,667,406) and Chand (US 4,948,496) with evidence provided by Illmann et al. (US 4,522,899) as applied to claims 1-8, 10-15, 17 and 19 above, and further in view of Silfverberg (US 6,638,107).

Addressing claims 16 and 18, Tabata is silent regarding metallic end caps clipped to the housing and captivating the current collectors, thereby providing electrical connections for the sensor.

Silfverberg discloses an electrical connector; wherein, the electrical connector 70 is metallic end cap (4:9, figures 8-9) that clips to the housing 23 and captivating the current collectors 11 (figure 8, the conductors 11 have surrounding sheath to provide electrical insulating and sealant, 4:64-5:13), thereby providing electrical connections (5:15-38).

At the time of the invention, one with ordinary skill in the art would have found it obvious to modify the gas sensor of Lofgren and Tabata with the metallic cap end 70 of Silfverberg for each of the current collector of Lofgren because the metallic cap 70 would act as electrical connector as well as providing ring seal for the current collector (Silfverberg, 5:5-12).

10. Claims 1-2, 4-8 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Derr (US 2006/0108223 or '223) in view of Derr (US 2005/0179438 or '438) and Downer et al. (US 2003/0168336). Derr '438 and Downer are cited and relied on for the first time in this office action. Their use is necessitated by Applicant's amendment to the claims.

Addressing claim 1, Derr '223 discloses a current collector 35 (figure 9) and seal combination (base plate 12, figure 9) for an electrochemical sensor (measuring device, figure 1), in which are located sensing 4 (figure 3) and counter (15, figure 3, the electrodes 4 and 15 complete the sensing circuit; therefore, electrode 4 is the sensing electrode and electrode 15 is the counter electrode), and connection apertures (apertures

in the housing body for the seal 12 and the tip of the sensing electrode 4), the current collector and seal combination including:

A flexible current collector 36 (the current collector 36 is bent in different direction in figure 9; therefore, the current collector 36 is flexible) adapted for direct contact with the counter electrode 15 (figures 8-9) and

A compliant seal 12 inserted into the one of the connection apertures (figure 3), the current collector 36 extending through the compliant seal 12,

The seal 12 being in contact with the collector 36 substantially throughout its length along the current collector and

The seal being of an elastomeric material ([0014], the base plate 12 is elastic and is made of flexible plastic [0052]; therefore, the base plate 12 is made of elastomeric material),

The arrangement being such that compressive stress induced in the seal by reaction from the connection aperture urges the seal into distributed sealing contact with the current collector substantially through the length of the seal (in figure 3, the base plate 12 is a diaphragm with folded sections, which means that the base plate, when flattened, is longer in length than the length of the aperture of the housing; therefore, when the base plate is fitted in the aperture, a compressive force would be exerted onto the base plate by the aperture of the housing due to the difference in length, to form the fold sections; furthermore, the compression force would also increase the sealing contact between the base plate 12 and the current collector 36; hence, the disclosure of Derr reads on the limitation of claim 1).

Furthermore, Derr ‘223 discloses the electrode 15 is a silver electrode [0042].

Derr ‘223 is silent regarding the metal current collector and the compliant seal 12 being a thermoplastic material.

Derr ‘438 discloses an electrochemical sensor like that of Derr ‘223; wherein, the second electrode 15 is made of silver that protrudes through the base plate 12 (figure 1, [0032]).

At the time of the invention, one with ordinary skill in the art would have found it obvious to modify the current collector 36 of Derr '223 with the silver material of Derr '438 because Derr ‘438 discloses the silver material is used for the same electrode in the same electrochemical sensor as Derr ‘223 in addition to being bent in the same manner as the current collector 35 of Derr ‘223.

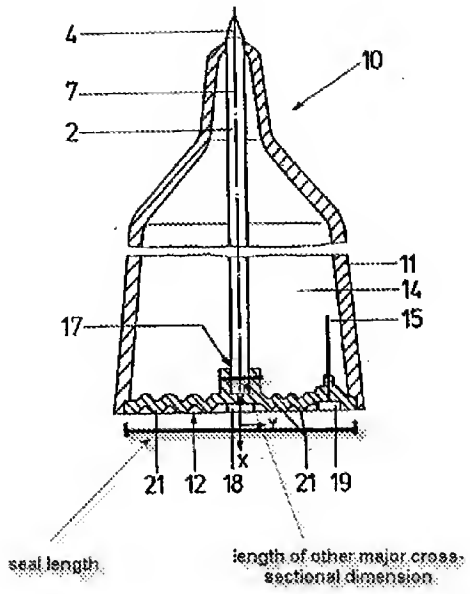
Downer discloses a gas sensor assembly; wherein, the seal is made of a compliant material of thermoplastic elastomer [0025 and 0041].

At the time of the invention, one with ordinary skill in the art would have found it obvious to modify the seal of Derr '223 with the thermoplastic elastomeric sealing material of Downer because the thermoplastic elastomeric sealing material of Downer is capable of preventing leakage of electrolyte (Downer, [0017-0021 and 23]) as well being an elastomer that is suitable for the purpose of the sealing material as required by Derr ‘223.

The limitation “over-moulded directly onto the flexible, metal current collector" is drawn to the processes of forming the compliant seal over the current collector, which do not further structurally limit the claimed apparatus (MPEP 2113).

Addressing claim 2, in the inserted figure 3 below, the seal length as indicated is longer than the length of the indicated major cross-sectional dimension.

FIG 3



Addressing claims 4-5, figure 9 of Derr shows that the length of the seal in the manner indicated in the above picture is at least 30 times larger than the diameter of current collector 36. Therefore, Derr discloses the ratios of current claims.

Addressing claims 6-8, Derr discloses the seal 12 comprises a central bore for receiving the current collector 36 (figure 9); therefore, Derr discloses the structure of the current collector and seal combination of current claims. The subject matters of current claims are drawn to the processes of forming the current collector and the seal combination, which do not further structurally limit the claimed apparatus (MPEP 2113).

Addressing claim 12, in the inserted figure 3 above, the tip of the folded section is the claimed tapered nose.

Response to Arguments

11. Applicant's arguments with respect to claims 1-19 have been considered but are moot in view of the new ground(s) of rejection.

Derr '438, Chand, Downer and Illmann are cited and relied on for the disclosures of the metal current collector and the thermoplastic elastomeric material for the compliant seal. Therefore, Applicant's arguments regarding the metal current collector and the thermoplastic elastomeric material of the compliant seal are moot in view of the newly cited references.

With respect to Applicant's arguments regarding the rejection of claims 1-8, 10-15, 17 and 19 as being unpatentable over the combined disclosures of Lofgren, Tabata and Chand, the arguments are not persuasive for the following reasons. Firstly, Illman shows that synthetic rubber is a thermoplastic elastomeric material. Secondly, the limitation "over-molded directly onto the flexible metal current collector" is drawn to the process of forming the compliant seal over the flexible metal current collector, which does not add any structures to the claimed apparatus as stated above. Thirdly, the modification discussed in the Office Action calls for the inclusion of the compliant seal of Tabata and not the sheath 11 of Tabata; therefore, in the modified sensor of Lofgren, the compliant

seal of Tabata would be in direct physical contact with the metal current collector. Fourthly, Applicant asserted that Tabata fails to disclose the seal being in contact with the collector substantially throughout its length along the current collector because of the gap 38. The argument is not persuasive because current application does not define the extend of the length of the compliant seal that would constitute as being "substantial" nor does current claim requires the compliant seal must be in continuous direct contact with the collector without having any gaps between them. Figures 6-7 of Tabata shows the seal is in contact with the wire at both ends as well as many portions in between; therefore, the seal is being in contact with the collector substantially throughout its length along the current collector as required by current claim. For the reasons above, Examiner maintains the position that the limitations of the amended claims are obvious over the combined disclosures of Lofgren, Tabata and Chand.

With respect to Applicant's arguments regarding the rejection of claim 9, the arguments are not persuasive for the following reasons. Firstly, the arguments directed to the limitation of claim 1 are not persuasive for the reasons stated above. Secondly, current claim recites two complementary halves having a central groove for receiving the current collector, which is disclosed by Watanabe; therefore, the disclosure of Watanabe meets the limitation of current claim.

With respect to Applicant's arguments regarding the rejection of claims 16 and 18, the arguments are not persuasive for the arguments regarding the rejection of claim 1 are not persuasive as discussed above.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BACH T. DINH whose telephone number is (571)270-5118. The examiner can normally be reached on Monday-Friday EST 7:00 A.M-3:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on (571)272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Nam X Nguyen/
Supervisory Patent Examiner, Art Unit 1753

BD
05/15/2010